



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,776	10/20/2003	William D. Fisher	10981523-5	4544
7590	06/13/2007		EXAMINER	
AGILENT TECHNOLOGIES, INC. Intellectual Property Administration Legal Department, DL429 P.O. Box 7599 Loveland, CO 80537-0599			GORDON, BRIAN R	
			ART UNIT	PAPER NUMBER
			1743	
			MAIL DATE	DELIVERY MODE
			06/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/689,776	FISHER ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Brian R. Gordon	1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) Responsive to communication(s) filed on 20 October 2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-30 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 10-14, 16-27 and 29 rejected under 35 U.S.C. 102(e) as being anticipated by Bjornson et al. US 6,284,113.

Bjornson et al. disclose once device 100 is attached to multiwell plate 54, the resulting apparatus 50 is inverted so that each of the apertures 30 fills with liquid. A meniscus 60 is formed at opening 34. Apparatus 50 is, for example, then positioned adjacent to an array of sample receiving reservoirs 142, which are part of microfluidic networks 108 in a microfluidic network plate 110 as depicted in FIG. 5. Each of the microfluidic networks 108 has an electrode 64 connected to an electrode 62 attached to transfer element 22. An electric potential is applied to the electroconductive material means of electrodes 62 and 64 causing a precise amount of liquid 58 in each of transfer elements 22 to be forced out of the transfer elements and into a corresponding sample receiving reservoir 142.

In the case of typical piezoelectric activation, picoliter to nanoliter droplets can be delivered at 1 kHz frequencies by cycling the deformation of a piezoelectric material via

Art Unit: 1743

voltage modulation. Recent advances in high-frequency printing mechanisms have made it possible to deliver such droplets at 50 kHz frequencies by using a piezoelectric element to vibrate a microfabricated cantilevered beam with a tip that is in fluid communication with a liquid reservoir.

In another embodiment, as shown in FIG. 19, the present invention may be employed in conjunction with capillary size dispensing tubes 804 associated with the apertures 703 of the present devices. The capillary tubes are used to form small drops of fluid and locate them precisely on substrate surfaces 142 in miniature arrays. The printed arrays may consist of nucleic acids, peptides, immunoassay reagents, pharmaceutical test compounds and the like. As shown in FIG. 20, the array 900 of capillary dispensing tubes in fluid communication with the array of source wells may be used to locate the drops on a substrate in predetermined patterns. Nanoliter quantities of liquids may be dispensed. Arrays of biological samples as dense as approximately sixteen hundred per square centimeter with center to center spacing as small as about two hundred fifty micrometers may be formed (column 24, line 27+).

As to claims 29-30, it should be noted the portion of claim directed to the water is considered intended use for the water is not considered an element of the device. The portion directed thereto describes a desired use or intended use with water wherein the device is not excluded from being employed with any other fluid.

The structural requirements of claim 30 are a plurality of wells, each having an opening and a vent covered by a permeable membrane.

3. Claim 29-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Madden et al. US 6,783,732.

Madden et al. disclose a multiwell arrangement and in one embodiment, the vacuum pathways pass through the plane of the collection-tray upper surface by way of vents that traverse the collection tray proximate each of said collection wells (column 6, line 35+). Also in this embodiment, the gas -permeable matrix covers the vents. The device includes openings 26.

4. Claim 29-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Clark, US 5,219,528.

Clark discloses a chamber having an opening on the upper side thereof facing the bottom surface of said middle plate, said chamber containing (1) at least one port extending through a surface thereof to permit a vacuum to be created within said chamber and (2) a microtiter plate containing a plurality of wells positioned within the chamber such that the ends of the cannulas extending beneath the bottom surface of the middle plate are located within said wells with the degree of extension within said wells of the microtiter plate being such that the ends of the cannulas are in close proximity and just above the bottom of the wells so that liquid deposited in said wells extends above the ends of the cannulas, said apparatus containing means for securing said three members together in vacuum tight relationship with a liquid permeable member placed between the top and middle plates, such that when a liquid is placed in the holes in the top plate and vacuum is created in the chamber, the liquid is drawn at a

controlled rate directly through the membrane without lateral dispersion, through the cannulas in the middle plate and, in turn, into the chamber.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 6-9 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjornson et al. as applied to claims 1-5, 10-14, 16-27 and 29 above, and further in view of Madden et al.

Bjornson et al. do not disclose employing a permeable membrane.

Madden et al. disclose a multiwell arrangement and in one embodiment, the vacuum pathways pass through the plane of the collection-tray upper surface by way of vents that traverse the collection tray proximate each of said collection wells (column 6, line 35+). Also in this embodiment, the gas -permeable matrix covers the vents.

It would have been obvious to one ordinary skill in the art to recognize that the device of Bjornson et al. maybe alternatively modified to incorporated the pneumatic device as taught by Madden et al. as an alternate means of transferring the liquid from the respective chambers.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bjornson et al. as applied to claims 1-5, 10-14, 16-27 and 29 above, and further in view of Church hill et al.

Bjornson et al. do not disclose employing a heat dispensing actuator.

Churchill et al. disclose those skilled in the art will recognize that other types of dispensers and valve actuation devices exist and may be used with efficacy. These may include, for example, but are not limited to piezoelectric dispensers, fluid impulse dispensers, heat actuated dispensers, air brush dispensers, and the like.

As such it would have been obvious to one ordinary skill in the art to recognize that the device of Bjornson et al. maybe alternatively modified to incorporated the heat actuators as taught by Churchill et al.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Coassin; Peter J. et al.; Overbeck, James W. et al.; Sitte; Hans; Hunter, Ian et al.; Vann, Charles S. et al.; Dannoux, Thierry L.A.; Borrelli; Nicholas F. et al.; Montagu; Jean I.; Cox; Stephen J. et al.; Barry; James V. et al.; Harris; Paul C. et al.; Hermann, Jr.; William J.; Pelc; Richard E. et al.; Papen; Roeland F. et al.; Jovanovich; Stevan B. et al.; Glaser; Scott M. et al.; Eddelman; Roy T. et al.; Loewy; Zvi Gerald et al.; and Zarowitz, Michael A. et al. disclose fluid transfer devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, Telework Thurs., 1st Fri. Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Brian R Gordon  
Primary Examiner  
Art Unit 1743

brg

**BRIAN R. GORDON  
PRIMARY EXAMINER**